USFG NEWSLETTER

SEPTEMBER 1993

USFG NEWSLETTER
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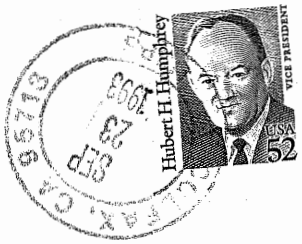

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VOL. 3 NO. 3

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Self-Starters Won't. Leak-Proof Seals Will. Interchangeable Parts Won't. All Waranties Expire Upon Payment of Invoice. Talking With Fools is Like Patting a Dogs Head, They Want to Hear Only What Makes Them Feel Good.

The **USFG Newsletter** is a quarterly publication of the US Faceters Guild.

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ELECTIONS

This is Election Month. For members only there is an enclosed ballot covering proposed changes to our Constitution, and a slate of officers for the 1994-1996 period. Please mark your ballots and send them in to your editor, who will tally them and pass them on to Norm Steele for verification. Please note that as your editor for the past two years I will not be running for that position this time. I will, however, remain a member of USFG and will be helping out the new editor and also the Membership Chairman. The new officers will take office on January 1, 1994.

In general, you are being asked to simplify and clarify the Constitution. We have been feeling our way along for the past three years, finding what works for us and what does not work. Our Constitution was modeled upon those of other groups, but we have found that we cannot operate as those other groups, who can meet face to face, do. We should eliminate all references to Directors At Large, which we have never had, and to Articles of Incorporation, until such time when we do incorporate.

Articles and Sections cited refer to the only approved document titled

CONSTITUTION OF THE USA
COMPETITION FACETERS
(September 1, 1991)

If you do not have a copy of this

document to refer to, (the title may also read USFG, but there has been only one Constitution issued since that date) send a self-addressed business envelope to your editor with 29 cent stamp on it, and I will mail you a copy. Do it right away so you can get your vote in soon. Results of the voting will be published in the December newsletter. FVS.

DISCUSSION OF ISSUES

Mailing the Newsletter Outside the U.S. There has been concern expressed that if we send this newsletter outside the U.S., material confidential to our cutters in the Australian Cup Challenge would fall into competitors hands. This newsletter has never put out any information private to American cutters. That has all been passed on to the Cup Chairman, to be distributed by him at his discretion. There is no reason to change this practice in the future. So there is no reason why our newsletter cannot be mailed to Canada and overseas as allowed by our Constitution.

Currently ARTICLE IV - MEMBERSHIP, Section 1, reads: "Any person, age nine (9) or over, who has applied for membership will, upon payment of dues and being duly recorded on the membership roll of the USFG by the Membership Chairman, become a member of USFG." To stop all future arguments, you are asked to vote for one of two clarifying sentences to be added tothis section--one stating that membership is open to residents of the U.S. only, or one stating that membership is open to residents of all countries.

Number of Newsletter Issues Per Year.

The editor should not be expected to write the entire issue himself. His main job is to edit what others send in to him, and arrange the newsletter format. The ballot will include several options, butyou must consider whether they are workable. You can vote to have six issues per year, but if the editor doesn't have the material to fill six issues he may have to issue some skimpy newsletters.

Combining Offices

Until such time that all offices are filled, we should maintain flexibility by allowing the Board to decide upon combining two or more offices into a single position, or letting one officer hold two or more offices. Granting this general power to the Board will allow deletion of items 2, 3, and 4 under Article V.

DELETION OF REFERENCES TO DIRECTORS AT LARGE AND ARTICLES OF INCORPORATION

Rather than quote the several instances of language change to be voted on separately, unless objections are raised you are being asked to vote whether or not to remove all such references from the Constitution.

A NEW CONSTITUTION

The number of amendments are such that a new revised Constitution, containing our name change, should go out to all members as soon after the election as possible.

THE FACETER'S GEM

My letter of inquiry to Carl Unruh was returned undelivered. Walt Carss called me today, Sept. 19th, after returning from the National Show in Denver, and gave me Carl's new address: Carl Unruh, 21 Shorecrest Place, Port Townsend, WA, 98368. Phone is 206--385-3753. We do not have the price of his three books of designs. I have the first book and do not recommend it to you, but the other two volumes appear to contain good designs, except that the last I saw of them they were not computer checked. FVS.

ALEX WOLKONSKI'S DESIGNS

Alex has given me permission to reproduce and distribute his Mini-Barion and later designs to our members. He does not ask a royalty, so they will be made available for cost as soon as I can get around to checking them over. I hope to announce their availability in the Dec. newsletter.

FVS.

THE TANGENT RATIO EXPLAINED

by Fred Van Sant

The terms "tangent ratio" refer to the process of applying a common multiplier to the **tangents** of angles. Please re-read this carefully. It does not say that the multiplier itself must be the ratio of two tangents.

The fact that the multiplier itself is usually the ratio of the two tangents of two angles (the old and new), and is used to translate one set of angles to another on either crown, pavilion, or CAM Preform does not mean that the Tangent-Ratio is limited only to such usage. The phrase "tangent-ratio multiplier" may be misleading, because in fact the multiplier may be any number whatsoever, and need not have anything to do with angles or their tangents. The important thing to remember is that it is the **tangents** of angles which must be changed, and they must be changed by the **same** multiplier. In changing the angles of the crown or pavilion we are changing the vertical dimensions or the stone. We can also change the horizontal dimensions, and here too the Tangent-Ratio comes into play.

In my Macintosh design program "MacGem", I have recently put in a section which mostly automates the changing of a design to a different L/W version of the same design. I call the computing routines "stretch routines", although they also work to shorten the L/W as well. Robert Strickland's new version of GemCad (4.51) also does this. When you change a design's L/W ratio, just about everything is thrown out of kilter. The index numbers of all facets must be adjusted; facet angles have to be all recomputed; girdle and table points must be fixed so that the slope of the lines connecting them conforms to index-line slopes, and internal point locations must be recomputed. When a round design, say a SRB crown, 96 index gear, is stretched into an oval, like L/W=1.3, the curvature along the side becomes flattened and index numbers must be lowered accordingly.

Because the index numbers of facets represent circumference angles, the tangent-ratio process can be applied to change all facets' index numbers from one set into another. The multiplier used to do that is obtained by dividing the new L/W into the old one.) If you start from a round design where L/W=1.0 and you want to elongate the design into L/W=1.3 then the multiplier for changing index numbers is 1/1.3 or .76923. I realize that the average faceter will never use the Tangent-Ratio for this purpose, but I just wanted you to know that when you grasp a general idea, there are often new ways to use it if you simply apply your imagination.

The advantage for cutters in stretching a design should be obvious. Let's say you have a nice piece of rough sapphire with an L/W of 1.327 after knocking off the thin projections. It's not easy to find a design with exactly that proportion, so you select one with an L/W close to it that you like, and alter it to exactly L/W=1.327. Now you will get the maximum carat weight return on your finished stone.

Now back to the vertical dimensions, I said you could use any multiplier you like. Let's say you've finished the pavilion and find that you have just enough material for a crown height which gives C/W= .15, but the C/W called for on the design sheet is .172. Now you are going to have to lower those crown angles given on the design sheet. You can spend half a day using trial-and-error in your calculator or computer, entering an old angle and guessing at the new angle, then refiguring to see what C/W you get. But there is an easier way: You should use a multiplier which is .15/.172 (.87209), the desired C/W divided by the design C/W. You multiply the tangents of all crown angles by this number to get the new set of tangents, which are then translated into a new set of crown angles; these will produce a crown whose C/W is .15, just what you need.

If you have a light-colored stone and plenty of crown left, you might want to heighten the crown. It works the same as above. Your multiplier will be greater than 1.

Larry Beshore, a custom faceter who attended the Northwest Conference at Bend, Oregon last May, asks for the name of the man there who was selling a dial indicator which screwed on the back of the faceting head of the Facetron, which improved the accuracy of the cutting angle setting. If anyone knows his name, let me know so I can pass it along. FVS

GEMS, MINERALS FOR SALE
BY U.S. MILITARY

(from San Jose Mercury News, June 28,1993, via BRECCIA, newsletter of the Santa Clara Valley Gem & Mineral Society)

The end of Cold War closeout sale included not only diamonds but also 16 million carats of sapphires and rubies. They've been stockpiled in 88 secret underground locations around the country. The 6 million carat diamond collection was acquired from Brazil and the Belgian Congo (Zaire) shortly after W.W.II in barter deals for surplus U.S. wheat. Although the stones were purchased for industrial use, they are considered gem or near-gem quality and include some blue-white diamonds rarely seen on the market. Profits are earmarked for deficit reduction and military expenditures.

Forty military stockpiles are for sale, including everything from aluminum oxide to zinc and, yes, 800,000 pounds of natural quartz crystals. The government is selling them over a period of 10— 15 years to avoid affecting gem prices by dumping them all at once. For information on how to submit bids, ask for solicitation forms from the Office of Contracting, Defense National Stockpile Center, 1745 Jefferson Davis Highway, Suite 101, Arlington, VA 22202-3402.

OH WONDROUS WORLD!

(from Pik-Nik-Rock 10/77, via others to Big Rocks Trader, March, 1993)

Salt is a wonder. When we think that salt is composed of two poisonous substances, we are filled with wonder. How is it possible that salt, which is necessary to life, is composed of sodium and chloride, either of which if taken individually could kill you? We cannot answer it. It is a wonder.

The alnico magnet is a wonder. It is the strongest magnet in the world, and yet it is composed of 3 non-magnetic substances--aluminum, nickel and cobalt. It cannot be explained, it is a wonder.

Water is a wonder. Its chemical formula is H_2O. That means it is two parts of hydrogen for each part of oxygen. Oxygen is flammable, hydrogen readily burns. Unite hydrogen and oxygen into water and you put out fires with it! Another wonder!

MAKE YOUR OWN STONE HOLDERS

(From Chronicles Of A Faceting Man - Part 6, by I.W. "Bud" Rogers)

In my book, there is more to being a member of a lapidary club than potlucks and programs. Accordingly, one of the "more thans" is to display your acquisitions and accomplishments at the club's annual show. Once I had begun to exhibit I always planned on a new display each year. Accompanying this penchant for exhibiting was experimenting with different case designs. By the time I had cut enough stones for a display the case design had become standardized, and I had four or five on hand, each with its own set of risers. Having a case for displaying faceted stones, therefor, was no problem. For those of you who are rock hounds as well as faceters, I still plan on having a new lapidary display each year in addition to my faceted stones.

My observations of faceted stone displays at shows, mostly the Faceters Fair, were such that I had already begun to develop certain criteria to guide my own way of displaying. Just laying the stones on the risers never appealed to me. Consequently, some kind of stone holder was a necessity. Assuming Imade holders with wire of some sort, I didn't want to poke holes in the risers. Then I would have to have a base for the wires. At least I might achieve the flexibility of arrangement I wanted. But, would the holders be precise and presentable? It was beginning to look as though I would have to learn by doing, the big question being how much doing before I learned.

My first few attempts were total disasters. If there was a mistake to be made, I made it. There was no way all the problems could be blamed on Murphy's Law because everything was of my own doing. The first sets of wires were next to worthless. A friend from Corning, Paul Harris, had come to our show and was exhibiting his faceted stones. He suggested steel guitar strings, such as he was using for his stones. Paul further suggested that guitar strings .010" to .014" would be an acceptable size to use. Nothing was said about the little styrofoam balls I had cut in half for the bases. No need to; I already knew they were a mistake.

(continued on page10)

The following article first appeared in FACETS in its November, 1990 issue.

CIRCULAR PREFORMING

by Fred Van Sant

This article is about making preforms based on a faceted circular shape, which is one where all girdle points lie on a circle at evenly-spaced intervals, with the object of finding ways to make easy and accurate preforms of non-round shapes. We know that the sides of round shapes are equal-distance from the center (ECED) and can be cut at a single mast height setting, but we often overlook some hidden possibilities when we want to design a new cut or just improvise a cut on the stone itself. Several such possibilities are presented here.

The Incomplete Circle: This idea is represented by FVS-196. Had we made continuing girdle facets every fourth index number, it would have been a 24-sided round shape. Other preform shapes can be made using this same idea.

Secondary Sides Between Points: This second idea is a two-step sequence. You complete the circular shape, and then using the points obtained, cut away new flat sides between the existing points. This is illustrated by the accompanying modified version of Sid Word's 9 Sided Triangle which recently appeared in FACETS. It is made easier to preform by changing two of the indexes by one tooth each. The preform details are on the diagram sheet. I used this same idea on my modified SRB (FVS-161).

Secondary Hinge Facets: From a completed circular shape, a facet is cut to meet only one of the girdle points; that is, it hinges off an existing girdle point. This is illustrated by Figure 1, an outline of Nulli Secundus, where the completed circular shape was a square. The facet at index 28 is then cut to meet point A. Sequences of hinging can become quite elaborate, but loss of material must be considered.

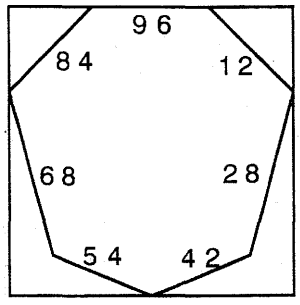


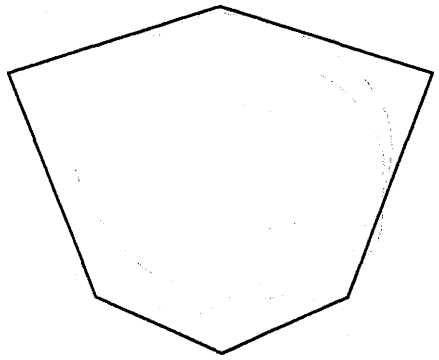
Figure 1

← Point A

CW direction upper 3 facets part of octagon.

Side Meet Facets: This means having two facets meet exactly at a point on an existing side of a completed circular shape. Figure 1. illustrates this technique also. Facets at indexes 42 and 54 meet in the center of the bottom of the square.

Uneven Circular Indexing: Like the Incomplete Circle, this method cuts a non-circular ECED shape at a single mast height setting, but uses uneven indexing, and like the Incomplete Circle, all girdle facets are tangent to an inscribed circle. Figure 2. is one of many such possible shapes. Its index gear is 120. (note: It later became FVS-234.)



where

Combininations of these various ideas should lead creative cutters to non-round stone shapes which lie within the realm of easy and accurate preforming.

Easyform Shapes

In this issue are printed two new designs in which the preforms can be made using 90° facets only. The key idea involved is Constant Mast Height (CMH). When you cut an ECED shape you are using only one CMH. Easyform Shapes use two or more CMH settings. The second (and sometimes third) CMH is obtained by one of the methods in the previous article. The number of CMH settings you can use is limited by loss of material -- each CMH setting cuts away more of your stone, so usually it is not practical to go beyond the second setting. Each group of facets cut at a given CMH constitutes one set of facets. The term "Easyform" was used for lack of a better word to designate this type of preform, which is easy to do and involves no measuring. You might also think of it as 90-degree-Meetpoint preforming.

Easyform-1 was intended to go with this issue, but because of Charles Hettich's death after all the masters were made, I had to use it for filler.

You do not have to cut complete rounds at the first

CMH. Your material should roughly correspond in shape to the design's plan view. You need only have enough material to make the points to which the second set of facets are cut. FVS.

If a facet don't touch the girdle it is floating.

Notes on Prophetu: You will notice that on both the crown and pavilion there are two groups of facets, one is fixed at the girdle and the other is floating. On the crown the crown girdle facets are fixed but all the others as a group are floating. On the pavilion the eight culet facets are floating.

Some think that floating facets are easier because you don't have meets to worry about; others think they are harder because you don't have a point to cut to and must resort to measuring, which most cutters don't like. On Prophetu, because of the separation of the two groups of facets, both the crown and pavilion heights are adjustable, so if you make a mistake you can just bring the floaters closer to the girdle, lowering the height.

This all reminds me of a story about Cliff Hiner and floating facets. Back about 1980 or 81 Cliff and I had both been agitating for having all entrants in a given class cut the same design, but no one seemed to want to listen. Then about 1982 or 83 when I was judging at Faceters Fair, across the table from me a couple of judges were judging another class of entrants. At that time entrants could use any design they wished. Suddenly the judge across from me said, "This damn stone has no meets!". It was Cliff Hiner's stone. He had purposely designed a stone with the fewest number of facets and no points made up of more that three facets. It didn't look very fancy but it was perfectly legal, and he couldn't possibly lose any points on meets, while everyone else could. It often takes an object lesson like that to wake some people up. The result was that the following year and forever since all entrants in a given class cut the same design, except for those competitions where an outside sponsor specifically stated the design was cutter's choice.

Up in Bend, Oregon, last May at the Northwest Conference I ran into Cliff at the trailer park and we had a good laugh recalling this incident. He has been floating around the U.S. the past few years in his Motor Home. FVS.

International Rules

Correspondence between Irene Whitham and me on IRs has stopped. It appears to your editor that there is not sufficient interest in Australia to form IRs at this time. This is understandable since there is really no incentive for the Australians to work towards a new set of International Rules when the rules they are now using have been found acceptable by enough faceters overseas to make their Australian Cup Challenge a going affair. Cutters vote with their stones!

My correspondence has indicated that the only IRs acceptable to them will be ones exactly like the current Australian rules, which they are using now, so what is there to discuss ? FVS.

PACKAGE DEAL

The phrase "Cutters vote with their stones", reminds me that in many things in life we contract for Package Deals--we enter into agreements that contain many elements, some that we don't like, but that are part of the entire package. If we accept the package we should not complain about the elements. When you enter a faceting competition you accept a package deal--you agree to abide by whatever rules the competition holder sets forth. There should be no grumbling unless those running the competition violate their own rules, and then it should take the form of a positive suggestion in writing by the cutter who feels he has been wronged.

In particular, "Visual Effect" in the Australian Cup Challenge does allow the judge to make a subjective judgement, and on any damn basis he pleases, regardless of references to brightness plots. Knowing this, there should be no grumbling about how this feature is scored. IT'S A PACKAGE DEAL! FVS.

GemCad News

GemCad News, September, 1993, has a very good article on Symmetry as it pertains to the GemCad design program. The distinction between Radial (rotational) Symmetry and Mirror-Image Symmetry is well illustrated. In the same issue is the announcement of the latest version of GemCad, which is 4.51.
Robert Strickland, 6408 Earlyway Dr. Austin, TX 78749-1632

POLISHING -- PART IV

by Merrill O. Murphy

(this is the last of this series on polishing, reprinted by courtesy of The New Mexico Facetor, via the TFG Newsletter, April, 1990)

Bonding - Last month I told you that water molecules enter microscopic fractures in glass. I went on to say that water molecules and glass molecules at the point of contact are caused to cleave into their component atoms and rebond to form a molecule-thick film of hydroxyls. Terry A Michalske and Bruce C. Bunker present proof of that sequence in their December 1987 article in Scientific American magazine under the title, "The Fracturing of Glass." I think I should clarify the terms, atoms, molecules, compounds, cleave, bond, rebond and hydroxyl.

An atom is the smallest bit of substance still retaining all the properties of the element (iron, hydrogen, mercury etc.) from which it came. Atoms are often attracted to dissimilar atoms to form compounds like water or silicon dioxide. A molecule is the smallest possible bit capable of retaining the properties of the compound from which it came. Depending on the strength of the attracion between the combining atoms, a compound may be very hard to break down or very easily broken apart. This locking together of atoms to form a compound is called "bonding". If a molecule of a compound is somehow broken into its component atoms (cleaved), those atoms are immediately free to reform the same or different bonds with adjacent atoms (rebond). A hydroxyl is simply any compoound containing an OH (oxygen+hydrogen) in its chemical formula. Hydroxides such as lye, acids such as sulfuric, and alcohols are hydroxyls. They may be weakly or furiously active and have simple or very complex formulae.

Okay, enough of that. On to the new theory of polishing.

Recap - I said, last month, that water has a very tiny molecule. You'd guess that from its chemical equation, H_2O, a combination of three of the smallest atoms extant. These tiny molecules slip to the bottoms of the very tiniest glass fractures. There, the molecules adjacent to the crack sides, cleave. So do the glass molecules in contact with the water. The freed atoms recombine (rebond) to form a silicon-based hydroxyl compound one molecule thick. The hydroxyl molecules then isolate the remaining glass from further attack by the water molecules - unless a certain degree of stress is applied across the glass sheet. If the stress exceeds a certain minimum level, the hydroxyl molecule at the very bottom of the tiny fracture is, itself, broken. This exposes the molecule of glass to the water, and the process continues as fracture propagation.

And Gems - When you polish a gem, a very considerable stress is applied both parallel to and at right angles to the surface being polished. If your polishing process uses oxides in a water slurry, water molecules and gem molecules cleave and rebond, one molecule deep, at the gem surface. Polishing stresses maximize at the microscopic high points on the gem surface. The hydroxyls formed there are easily planes off by the harder polishing powders. Ideally, the rebond, plane-off process repeats until the surface is totally flat and polished. If we continue to polish beyond this point, a reduced stress is applied evenly across the entire surface, and gem material is removed very slowly.

But things almost never conform to our ideas of the ideal.

Hydroxyls and Agglomeration - Our polishing agent particles are, themselves, subject to attack by the water in the slurry. Here, again, hydroxyls form and are broken under stress. Our polishing oxide is slowly reduced to a slurry of polishing compoound, polish-based hydroxyls and gem-based hydroxyls. If polishing stress is sufficient (read, lap speed plus hand pressure plus friction is greaat enough), a new compound of all the materials forms larger-than-polishing agent particle fragments. This little-understood process has long been called "agglomeration", and causes gem scratching.

Perhaps you wonder why agglomeration causes scratches. After all, the agglomerated bits are made up of relatively soft hydroxyls plus polishing particles, aren't they? Nothing there to scratch. But, remember, the agglomerated bits are much larger than polishing particles. Furthermore, they tend to be elongated, non-uniform shapes. When a few agglomerated particles pass beneath the

stone, the entire lap pressure is momentarily concentrated on those few small particles. The uneven shapes begin to tumble erratically. The maximum diameters of the various bits of agglomerate are directly between lap and stone at different times, thus further concentrating lap pressure. At some point, the agglomerated bits must either break up or force a pressure scratch into the gem surface. Either alternative relieves the pressure. Unfortunately, not all the agglomerated bits break up quickly enough to prevent scratching.

Remedies - As I've mentioned previously, there are several things you can do to reduce the likelihood of agglomerate scratching. You can reduce the speed of the lap and/or hand pressure on the stone. This reduces stress and the probability of particle tumbling. You can score your polishing lap to trap agglomerated particles before they can cause trouble. You can use a softer lap which allows particles to sink into the surface. You can use a porous lap which also allows particles to sink in and reduce tumbling. Or you can wait until next month when I'll mention the possibility of controlling the rate of hydroxyl production by electrical means.

Laps - Despite recent pronouncements to the effect that laps are only a surface having little or nothing to do with polishing mechanics, I shall maintain otherwise. First, there is the degree of lap hardness. A very hard lap may give you very flat, very crisp facets, and that's good. Such a lap promotes particle tumbling, and, as I've mentioned several times, that's bad. To use a hard polishing lap effectively, you must slow the lap to well under 100 RPM and reduce hand pressure.

Lap porosity, natural, or synthetically achieved by scoring, is also important as mentioned previously. But there is one more item we have not yet mentioned - a possible interaction with water at the lap surface. Why not? If water can cause formation of hydroxyls at the surface of a gem mineral as chemically stable as quartz or beryl or sapphire, why not with a lap of whatever composition? And so, we have yet another hydroxyl entering the polishing slurry, the lap material-based hydroxyl. What effect does this have on agglomeration and polishing rate? I have no idea. Some lap materials may resist hydroxyl formation. Others, like tin, lead, zind, copper, and etc. as well as alloys of these lap metals are undoubtedly affected by hydroxyl formation.

Furthermore, metal polishing laps may act as catalysts in the hydroxyl conversion of the gem surface and in the agglomeration process. A catalyst, for those of you who have long forgotten your high school chemistry, is a substance whose presence promotes chemical action between other substances without, itself, undergoing change. The catalytic converter in your automobile uses a catalyst (platinum or platinum-iridium, I think) to encourage more complete oxidation of exhaust gases.

Editor's Note: Apparently the stress of wind pressure and differential heat expansion upon our glass windows is not sufficient to cause crack propagation, or they would all be disintegrating and falling out of their frames. The question is, How much stress is required? Does it occur in ordinary polishing, only when we press the stone hard against the lap, or not enough to be worth considering?

There is another point to be made. Throughout our universe, different physical/electrical laws apply depending upon the size-level of matter involved. Ordinary matter which 'obeys' one set of laws on the macro level may not apply at all when that same material is reduced to the colloidal level. Taken down another step to the molecular level, they surely do not apply. Therefor any theory based on activity at the molecular level is not comparable with the Newtonian theory of polishing. As theories, the two have almost nothing to do with each other. They can exist comfortably side-by-side.

The Bielby theory was originally concerned with polishing of metals; the mistake was to expand it into other materials where it didn't apply.

Among faceters I can see why some might think that there is indeed a surface flow. If you recut a well-polished facet using the 1200 diamond lap, on some materials the surface of the facet does not come off smoothly, but starts coming off in patches. After all the patches have been removed, then the surface cuts evenly. It appears that, for some materials, in polishing there may develop a harder or more brittle surface layer which is

extremely thin. There are many instances where high heat causes brittleness in various materials, and I wonder if a surface brittleness, the product of heat from the abrasive process, occurs and is mistaken for a 'layer' because it tends to come off in flakes.

So, with due regard to Bielby and hydroxyls, I see no reason to abandon the Newtonian theory of polishing. We do need to allow for the structure of crystals and directional effects of abrasive attack, for heat effects at the facets surface, and for other modifications as are necessary to expand the Newtonian theory to fit our circumstances. FVS.

MAKE YOUR OWN STONE HOLDERS

(continued from page 5)

So it was back to the drawing board, the first of several as it turned out. I cut three pieces of #10 wire in an appropriate length, bent the tips and tried to solder them together. Don't ever try it, expecially when the tips persist in turning in their direction, not yours. It had not occurred to me that maybe, just maybe, the tips could have been bent after the wire was soldered. More important, what did occur to me was that the insistent pursuit of developing stone holders along the path I was following would not result in what I really wanted. Time to pause and think back over some displays of faceted stones I had seen.

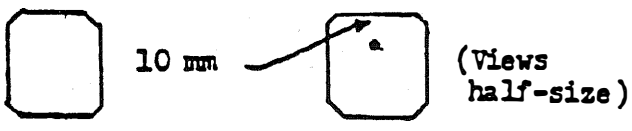
Looking back later, I was at the turning point of being able to reach my basic criteria. First, I remembered a beautiful display by Glenn and Martha Vargas I had seen at a show in Reno. The stone-holding wires were inserted in tubing, which upon asking, I was told to be copper capillary tubing used in refrigeration. That idea solved one problem. In rummaging through my supplies in silver jeewelry making I found some 1/16" OD silver tubing.

One-third of the way there. By now I had decided I didn't want single prongs forming a three or four wire cluster. Somewhere along the show circuit I had seen stone holders made by bending the wire to form a loop at the top. The loop was then bent to make a lip which gripped the stone at the girdle. Now insert the wire in the tubing and I would be almost there.

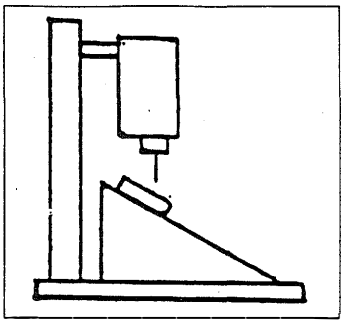
One more step. How to provide for a flexible arrangement of my stones? The principle of the styrofoam halves was valid--all I needed was better material for the base. I had some scrap sheets of plastic, why not do some experimenting. I cut a few pieces about 1" X 1" and drilled 1/16" holes at what looked like a good angle. I now inserted the tubing and prong assembly in the hole and I was in business. Well, not quite. It took one show to have it brought to my attention that the angle was too great and not consistent. After I returned home I developed a way to drill all those holes at the same angle. It is the final product I shall share with you. If you are not satisfied with your present stone holders, give these a try.

Let's start first with the base. You can probably obtain the plastic sheet (scrap pieces maybe) at an auto glass shop. I did. Mine are 3/16" thick. I found out later that all plastic is not alike. The good kind had blue labeling on the protective paper covering; the poor kind had a green labeling. The blue label cut much smoother and could be dry sanded. As a reminder, do not remove the paper covering until the very end when you are ready to insert the tubing assembly into the hole you will drill in the plastic. The finished size of my bases is really determined by the storage boxes I use, so the bases are approx. 1" X 1" X 3/16". A small band saw is probably best at cutting the plastic sheet into strips, but I don't have one. I used a fine toothed plywood blade on my table saw. A saber saw just doesn't do well, although I did finally find a blade which cuts plastic without gumming up the saw cut. Cut a little oversize to allow for subsequent sanding. Clamp a strip of wood to the cross cut guide and proceed to cut the strip into proper lengths.

The next stip is sanding. I have an iron disk on which the sandpaper is glued. The disk fits on the saw arbor just the same as a saw blade. Adjust the wood guide until it just clears the sanding disk. Try to maintain the same pressure as you sand. then sand the corners. Your plastic base now looks like the figure on the left.



The figure on the right shows the base where you have marked the location of the hole to be drilled.

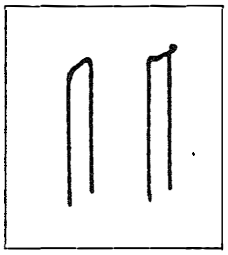


To drill that 1/16"hole properly you really need a drill press. Mine is so old it has white whiskers, but it works--Don't even try a hand held drill because you won't be able to control the angle. Build a 30 degree ramp and position the base so you are drilling toward the short end. See the schematic diagram above.

The actual angle will be 60° with the horizontal. This appears to be the proper angle for our kind of case and the cafeteria tables we use. There is a shelf about 8" from the bottom, so the stones will be 9 to 12" above table height. If you use a commercial case or if your club has higher tables, as Medford and Paradise do, you may find it worthwhile to experiment with a different angle. On the other hand, consider a couple of alternatives. Francis Musser has a fold-up skirting made of the same paneling as his case in which he displays his beautiful carvings. The skirting is used for regular tables; left off for high tables. Or do it your way and forget table height.

Initially, of course, your supply of bases will be used for making holders for the stones you have on hand. The extra bases become inventory for future use. Now cut some tubing and see how it fits in the holes. For average size stones I have found 1/2" is just right. The tubing can be cut with a faceter's trim saw or a jeweler's saw. If the tubing is slightly oversize (as it commonly seems to be), use a hand held tool with a felt disk and tripoli to "polish" until you have a snug fit.

Now comes time to make the prongs. You need a small needle-nosed pliers with the nose probably filed down even more, side cutting and parallel-jawed pliers, and a 6" plastic ruler with mm markings. These are all jewelry making tools. For most stones (11-15mm range), use #12 (.012") wire. Place the end of the wire at the 28mm mark. With the needle-nosed pliers, grip the wire at the end of the ruler and bend at a right angle. Then bend down the other wire to form the loop. Cut to the same length. Make another loop just like the first because you need two per stone. Place the loop end in the parallel-jawed pliers until you can just clamp it. Bend down. The lip formed is what will later fit over the girdle. In the box to the right I have drawn what the prongs look like at these two steps. It will take some experimenting to get the right size loop. Use a file to make marks on the nose of the pliers so you can duplicate different size loops.



With the lips facing each other, put the ends of the wires in the tubing. Spread the pairs enough to insert a small rod (5/32 to 3/16" drill), the purpose being to be able to adjust the two loops evenly while you glue. Before you glue, place the tube on a firm surface and push down the wires so they reach bottom. Then when all is adjusted fully, squeeze a drop of KRAZY GLUE just above where the wires go into the tube. The glue will flow down the tube and in a short time firmly set the wires. To "set" the stone, place the stone table down on something like a paper towel, the edges of which can be folded up so that if the stone flips it doesn't go sailing into the wild blue yonder and land on the concrete floor. Better yet, have a rug on the floor. Spread the wires apart enough that the loops can start sliding down the sides of the stone. Push until you hear each side click in place. Turn table side up and adjust the prongs where you want them. For most stones this will be the middle; for hearts and pears it will be the shoulders; for triangles a point and a side opposite. Use your pliers to hold the tube while you insert it in the hole in the plastic base. Turn until the loops are oriented to the base.

You will have to decide what size wire and what length tubing to use. In general, the smaller the wire, the better. You can always lengthen the tubing to as much as 3/4" if need be, just so you have enough spring in the wires to grip the stone securely at the girdle. A limiting factor, mostly with larger stones, is that the arc of the wire is such that the loops cannot slip over the girdle. The system still works at 18mm because I have a couple of stones that size, but with the EVELYN CUT

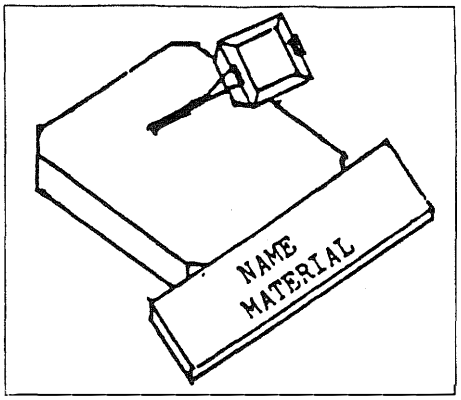
i had to make a bend in the wire about halfway to the tube because the stone had such a very deep pavilion. I store the assembled unit in 1 1/4 X 1 1/4 X 1 1/4" plastic boxes. The name of the cut is typed on paper, cut 1/2" wide and taped to the top. Labels are stored in plastic bags.

Most labels I have seen, including mine, are made from the 3 x 5 note cards. An option to be considered is the same weight paper as used for business cards. You could get a color to match the cloth of your case. Although the name of the cut is not required by the rules, do it anyway for a couple of reaons. One is that fellow faceters like me want to know the name of the cut, and the other is as an aid in communicating with someone who wishes to talk about a particular stone in your case. Printed labels would be superb but mine are typed. I prefer the name of the cut at the top and the material underneath.

After you have typed the labels on the cards, use a single-edged razor blade and metal guide to cut them exactly 1/2" wide and a 1/8" border at each end. Since I make my own display cases, I have plenty of paneling for cutting 1/2" strips, plus a couple of strips only 1/8" wide. Cut a length of the wood strip to match the label. Next, take a short piece (1/2" or so) of the 1/8" strip and glue flush to the top and to the back of the 1/2" strip. Take a length of double-stick tape an inch or so longer than the label and very carefully lower the tape to the back of the label.

Do your work on wood, not paper or cardboard. Turn the label over and carefully press down evenly on the wood strip, using paper toweling to avoid getting the labels dirty. Use the razor blade to trim off any tape showing. Insead of having bare wood showing along the edges, you can give your labels that extra touch by painting the edges the same color as your labels. When you display, the label is placed so it touches the front edge of the base. Notice that not only is the front edge of the base covered up, but also that the label is at a more readable angle than if laid flat on the riser. An added bonus is you don't need to worry about the possibility of a label curling from the heat inside the case.

How would you like to have a display of faceted stones so distinctive that there would be instant recognition? A comment to that effect has been made by the president of our guild. "Bud, those are very fine stoneholders. Are you aware, however, that they mark your case so everyone will know whose it is?" Well, I can spot Vern Johnson's case clear across the room, and I have never heard him object to the image; nor John Stacy; nor Doc Peters; nor Elmo Ellis. The mark of distinction. I kinda like the sound of that word and the image created.



NEW FACETING TIPS

On Labor Day weekend I (FVS) drove down to Sonora, CA, to Vern and Bettie Johnsons place to celebrate Vern's 80th birthday. John and Marian Alden were there and so was our Treasurer, Lillian Hettich. At one point in time John, Vern, and I were in Vern's faceting room--that's right--a whole room devoted to faceting. What a set-up! Vern had a board set vertically against one wallwith holes for dop sticks in it, and stones in all stages of cutting were mounted on dops, stuck in the holes and looking right out at you, so you could see everything you had. There was a cabinet in front of this board so you couldn't get so close your shoulder might bump the stones off their dops. From our conversation, the following tips emerged:

From Vern Johnson--Stone Cleaning: When polishing a stone, keep a bottle of little cotton swabs on sticks handy. Before inspecting the polish, dip the cotton end in alcohol, then roll the cotton end on a sheet of paper toweling to get rid of the excess alcohol so no film is left on the facet. Wipe the facet with the swab and it will be clean and lintless for viewing.

From John Alden--Diamond Spray: Before using your diamond spray bottle to charge the polishing lap, line up the spray opening with the end of the plastic tube at the bottom of the bottle (the tubing always bends and the end is off to one side of the bottle). Then shake the bottle to dislodge any conglomerated diamond that may be near or blocking the opening of the tube, and it is ready for use.

From Fred Van Sant-- Checking Flatness: To check your facets for flatness, get a small square of mirror about 2" by 2" square. This is obtainable at any glass-cutting shop. With a straight-edge and a single-sided razor blade, make a series of parallel lines for light to pass through by slicing through the silvering on the back of the mirror with the corner of the blade. The parallel lines should be 1/8 to 3/32 of an inch apart. Make these lines as fine as you can. When all the silver is off the blade will slide smoothly, but don't press so hard that you scratch the glass. Make at least a one-inch band of these lines.

Now with a single bulb above, hold the mirror with one hand, mirror side up, and the stone on the end of a dop with Blu-Tack in the other hand just below the mirror. The fine lines of light passing through the mirror will reflect on your facet. Move the stone around to see if the lines of light bend anywhere on the facet, especially near the edges. If they bend, your facet is not flat. You might prefer to mount the piece of mirror in a fixed holder. You could probably also use a piece of glass painted black on one side. I haven't tried that.

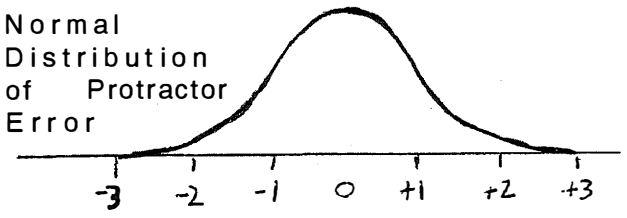
This technique should be handy for judging flatness in competitions.

Incidentally, the lap on Vern's machine was a tin lap, and it was scored all over with very short marks made by a special scoring tool--a wheel that rolled on the turning lap, mounted on the end of a holding shaft. John said he used a similar such tool, and his wheel--actually two of them side by side--were from cigarette lighters. Both Vern and John claim that after scoring and a vinegar application it polishes faster. I reserve judgement. FVS.

Computed design VS Proof-Cut Design

For comparing accuracy of angles, let's assume the proof-cut design's angles were taken from the protractor, and that the designer read his protractor accurately, but that the design was not computed before publishing.

If a hundred faceters were to cut the same computed design, the actual angles on their finished stones would vary from the computed design's angles in both the plus and minus directions by as much as around 3 degrees, let's say 3, and would fall into a normal distribution curve, as shown here, with the bulk of machines producing minor errors (less than -1 to +1 degree off) while perhaps only one or two machines would be off in calibration by as much as -3 or +3 degrees. Consider this offness a flat calibration error of the protractors.



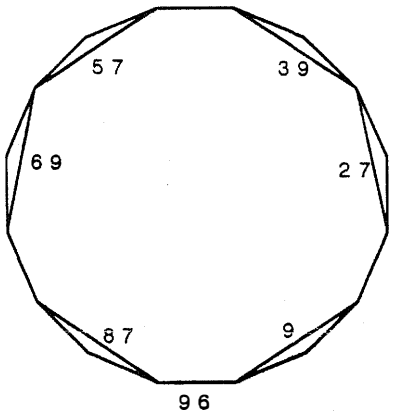
Now some cutters, both here and abroad, who have little awareness of what computers do can do, think that the proof-cut design is as good to cut from as the computed one. But on what machine was the proof-cut design done? We almost never know. The computed design's angles correspond to the plan view and side view produced. On proof-cut designs these views are usually hand-drawn, and cannot be relied on for accuracy. If the designer's machine was perfectly calibrated, there's no problem, but almost no machine is perfectly calibrated. If his protractor is off by minus one, the cutter whose actual angles would be +3 degrees high would be cutting the stone with angles 4 degrees high, and if the designer's protractor were off by minus 2 degrees, that same cutter's stone would be five degrees off in its angles! But cutting from a computed design, no cutter would be off by more than three degrees.

By way of example, in my first publication of Star Cuts, the first 1-60 designs, my protractor was off. If you have a set 1-60 with the graphic views on the left side and no revision date on the sheets, throw it out and get a new set. The first revision was dated 1/1/87. FVS.

Prophetu: Designed by Jerry L. Capps
Gear = 96 03-26-1993
Angles for Quartz

Crown:	Angle	Indexes
--- girdle break facets ---		
1. 10 at	48.00°	96,9,18,27,39, 48,57,69,78,87.
--- mains, one point at table ---		
2. 8 at	35.80°	6,18,30,42, 54,66,78,90.
--- table break facets ---		
3. 8 at	25.23°	96,12,24,36, 48,60,72,84.

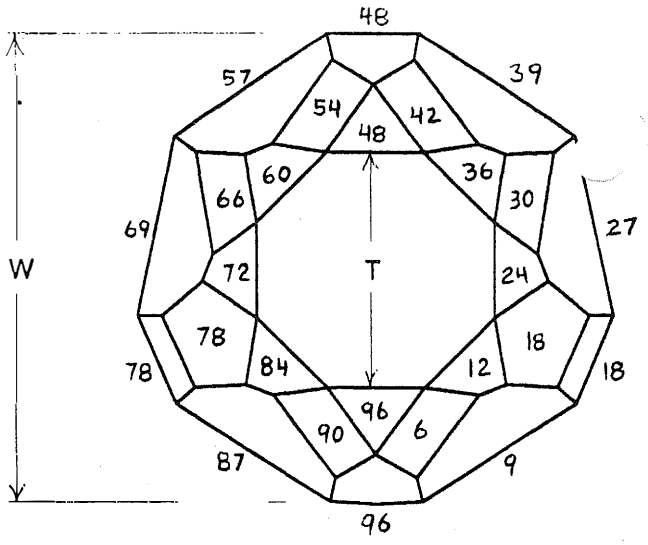
Table Area = 27.6 %
L/W = 1.0
T/W = .50
C/W = .184
P/W = .522
H/W = .726
VF = .25525
GVF = .0075

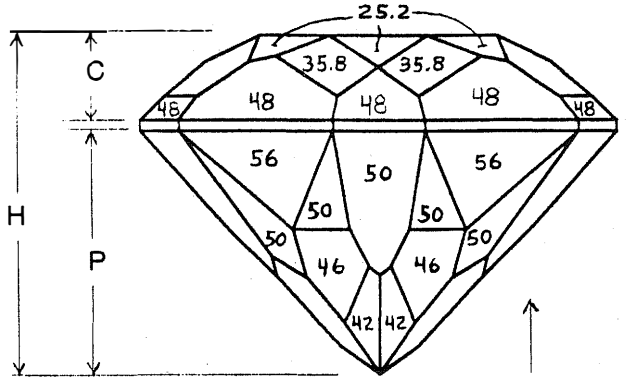


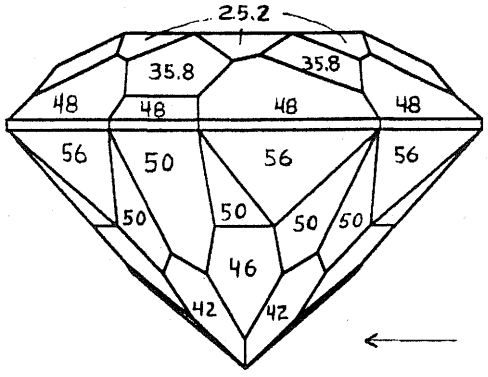
Preform:
Method 1) Cut a 16-sided round at 90°, beginning on Index 96, and every sixth gear tooth thereafter. Then at 90° cut 6 facets at indices 9,27,39,57,69,87 until they meet the points on each side.

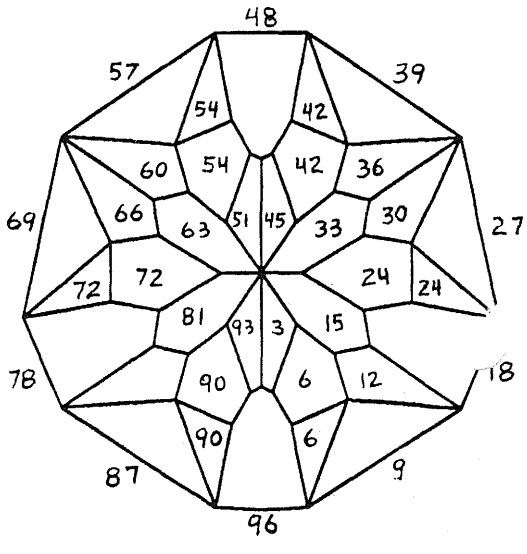
Method 2) CAM Preform:
Maximum Cone Angle = 37.0°
1. 4 at 38.08° 96,18,48,78.
2. 6 at 39.76° 9,27,39,57,69,87.

Pavilion:	Angle	Indexes
----- girdle breaks -----		
1. 2 at	50.00°	96,48.
2. 2 at	50.00°	18,78.
3. 6 at	56.00°	9,27,39,57,69,87.
----- points on girdle -----		
4. 12 at	50.00°	6,12,24,30,36,42, 54,60,66,72,84,90.
----- intermediates -----		
5. 6 at	46.00°	6,24,42,54,72,90.
----- culets -----		
6. 8 at	42.00°	3,15,33,45, 51,63,81,93.









Easyform-2
Gear= 72 8-14-1993
Angles for Corundum

Crown:	Angle	Indexes
1. 2	at 53.78°	72,36.
2. 4	at 41.76°	8,28,44,64.
3. 4	at 39.66°	12,24,48,60.
4. 2	at 44.19°	18,54.
5. 4	at 36.00°	4,32,40,68.
6. 4	at 34.82°	14,22,50,58.
7. 8	at 28.00°	4,14,22,32, 40,50,58,68.

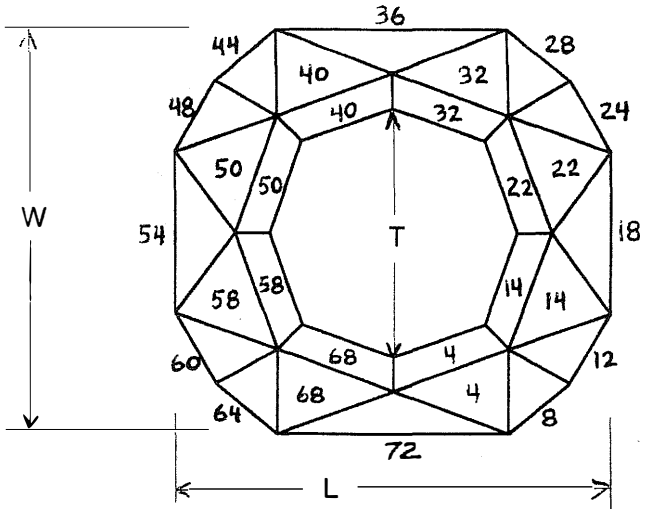
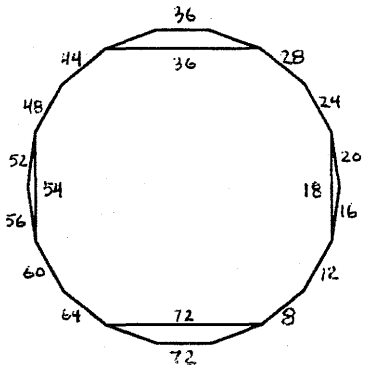
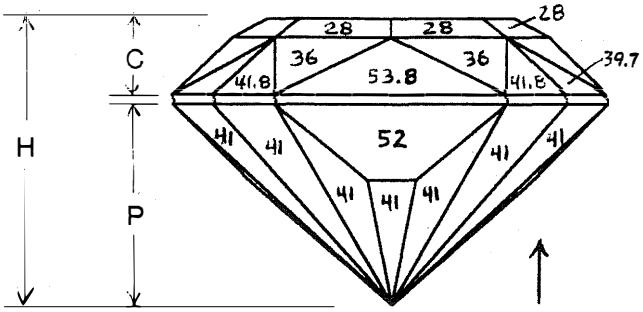
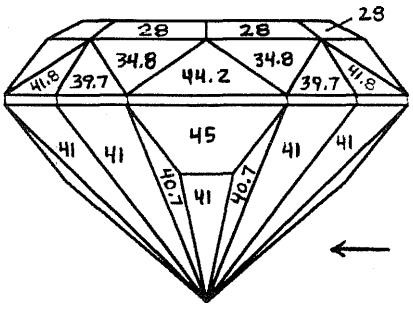


Table Area = 29.3 %
T/W = .6197
C/W = .1680
P/W = .4943
H/W = .6823





Preform: Cut an 18-sided round at 90°, beginning on index 72 and every fourth tooth thereafter. Then cut four facets at 90° at indices 72,18,36,54 to meet corner points as shown.

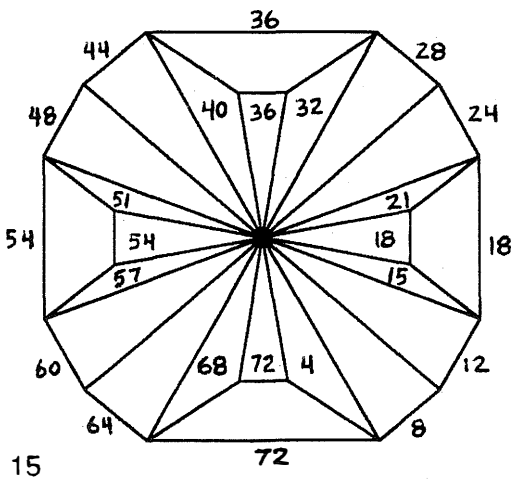


CAM Preform:
Maximum Cone Angle = 36°

1. 12	at 41.00°	4,8,12,24,28,32, 40,44,48,60,64,68.
2. 4	at 40.67°	15,21,51,57.
3. 4	at 90.00°	72,18,36,54.

Cut to meet corner points as shown.
Note: this CAM uses pavilion angles, so the culet point made is permanent.

Pavilion:	Angle	Indexes
1. 2	at52.00°	72,36.
2. 8	at41.00°	8,12,24,28, 44,48,60,64.
4. 2	at 45.00°	18,54.
5. 4	at 41.00°	4,32,40,68.
6. 2	at 41.00°	72,36.
7. 4	at 40.67°	15,21,51,57.
8. 2	at 41.00°	18,54.



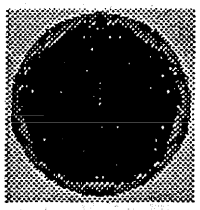
Designed by Fred W. Van Sant

What's New

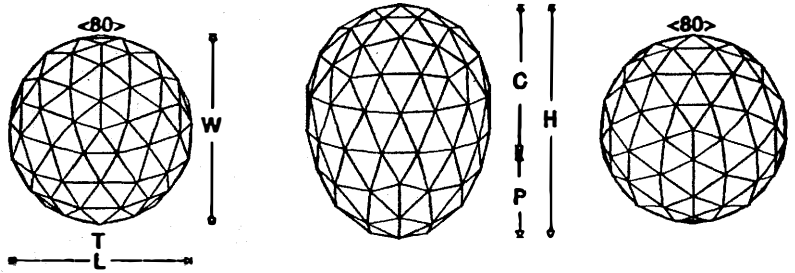
04.498 Bucky Easter Egg

Design is the Buckminster Fuller's geodesic sphere stretched into an egg. Requires close attention to details, but is not particularly difficult to cut.

A design like this does not depend on "brightness", which is very poor, but on reflections from the facets themselves which is considerable because there are many facets.



SPOT+Ambient RI=1.54
Design: 01.498
Table Brt=6 Avg Brt=13

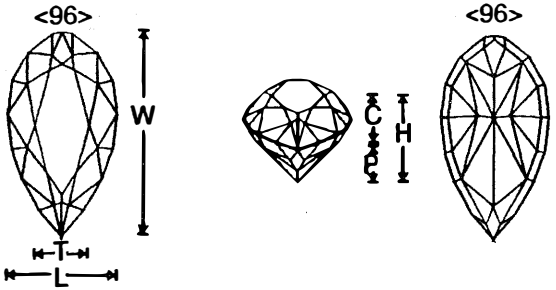


Reference: **Strickland, Robert;** ***FACETS*****, May 93, p4**

80 Index	L/W=1.017	P/W=0.681	C/W=0.608	T/W=0
180 facets	H/W=1.289	Vol=0.667 W³		

05.021 Sultry Teardrop

SPOT+Ambient RI=1.54
Design: 05.021
Table Brt=38 Avg Brt=29

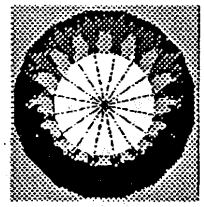


Reference: **Newcomb, Craig;** ***Off the Dop*****, Apr 93, v4n2**

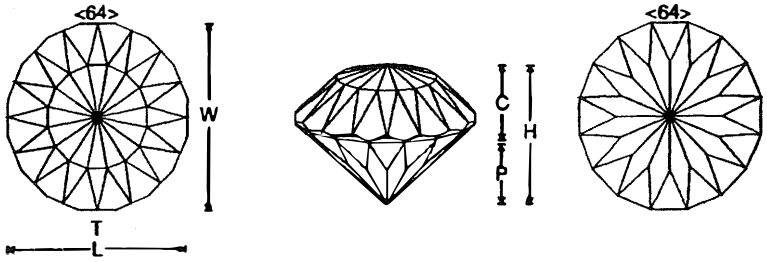
96 Index	L/W=1.833	P/W=0.587	C/W=0.228	T/W=1.163
72 + 16 facets	H/W=0.834	Vol =0.522 W³		

01.499 Katy's Kreation

A feature of this design is that the Crown and Pavilion facets are "unstacked". In the original instructions this is accomplished by rotating the stone at the time it is redopped for cutting the Crown.



SPOT+Ambient RI=1.54
Design: 01.499
Table Brt=0 Avg Brt =47



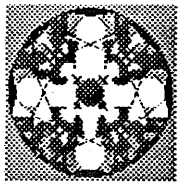
Reference: **Reed, Katy;** ***Midwest Faceter*****, Jun 93, p14**

64 Index	L/W=1.000	P/W=0.475	C/W=0.293	T/W=0
80 + 16 facets	H/W=0.789	Vol =0.256 W³		

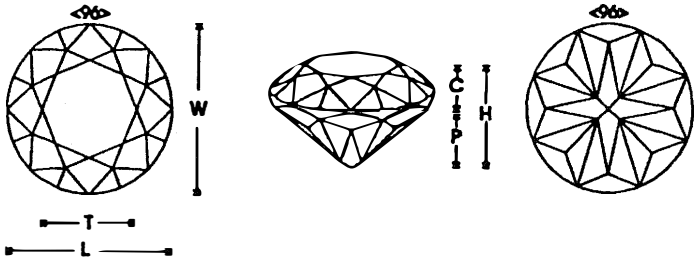
What's New

01.497 Queen Cut

Patent and trademark has been applied for this design. Commissioned in honor of Thai Queen Sirikit's 60th birthday.



SPOT+Ambient RI=2.16
Design: 01.497
Table Brt=74 Avg Brt=65

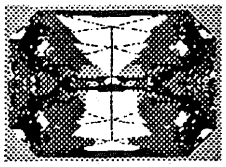


Reference: **Grossbard, Henry;** ***Jeweler's Circular Keystone*****, Feb 93**
(Grossbard) Strickland, Robert; ***FACETS*****, May 93, p3**

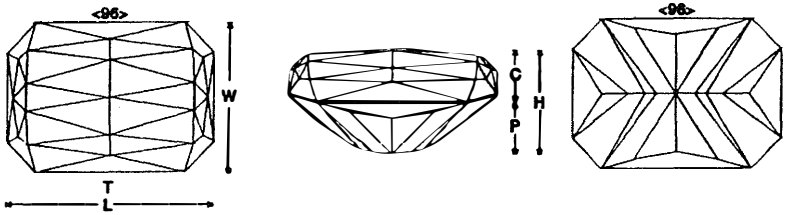
96 Index	L/W=1.000	P/W=0.469	C/W=0.150	T/W=0.576
61 + 1 facets	H/W=0.639	Vol =0.222 W³		

01.143 Backgammon #3

Crown is Stepp's idea and pavilion is Covill's . Name comes from crown resemblence to a Backgammon board.



SPOT+Ambient RI=1.54
Design: 04.143
Table Brt=50 Avg Brt=47

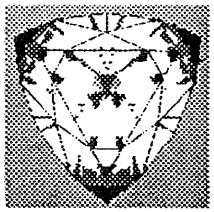


Reference: **Stepp, Robert S & Covill, Charles;** ***New Mexico Facetor*****, Apr 93**

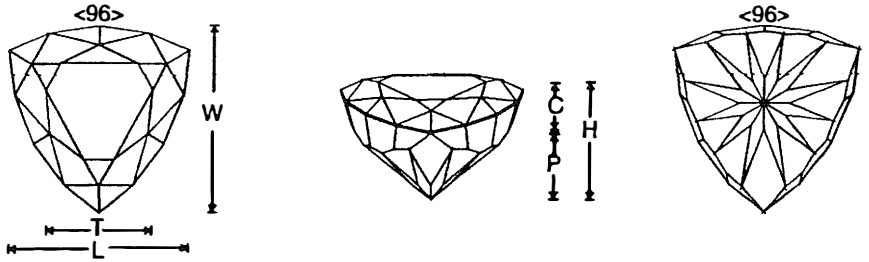
96 Index	L/W=1.447	P/W=0.490	C/W=0.218	T/W=0
64 + 8 facets	H/W=0.719	Vol =0.451 W³		

13.079 Brilliant Barion Triangle

Exceptional brightness for a cushion triangle design.



SPO~~T+Ambient for RI~~=1.54
Design: 13.079
Table Brt=89 Avg Brt=83

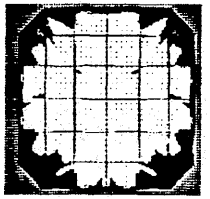


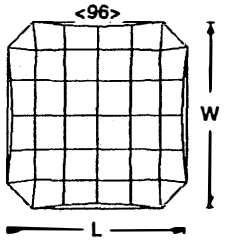
Reference: **Ross, Wilf;** ***North York Faceter's Guild Newsletter*****, Apr 93**

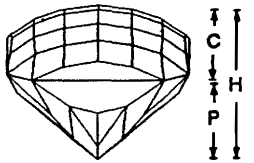
96 Index	L/W=1.005	P/W=0.520	C/W=0.100	T/W=0.598
64 + 12 facets	H/W=0.640	Vol=0.218 W³		

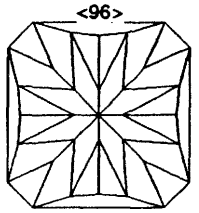
What's New

07.099 Barion Checkerboard









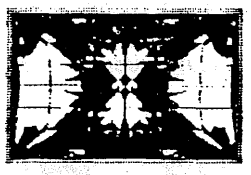
SPOT+Ambient for RI=1.54
Design: 07.099
Table Brt=99 Avg Brt=78

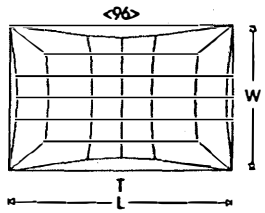
Reference: Word, Sid; *FACETS*, Jun 93, p5

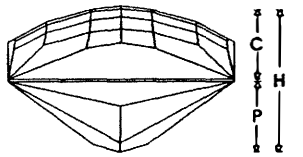
96 Index	L/W=1.000	P/W=0.572	C/W=0.257	T/W=0
72+8 facets	H/W=0.849	Vol =0.367 W³		

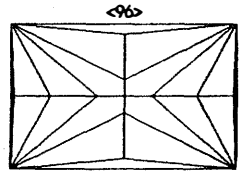
06.035E Rectangular Checkerboard #2

L/W variation of design 06.035. See also 06.035C which appeared in the same reference. Note the drastic change in brightness pattern between the similar designs.









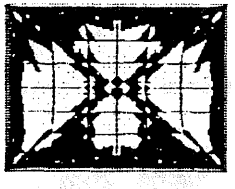
SPOT+Ambient for RI=1.54
Design: 06.035E
Table Brt=51 Avg Brt=53

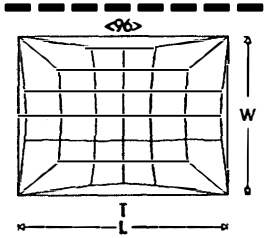
Reference: Word, Sid; *FACETS*, Jun 93, p7

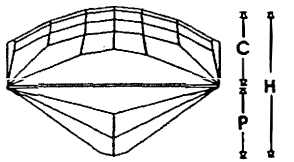
96 Index	L/W=1.600	P/W=0.635	C/W=0.371	T/W=0
56+4 facets	H/W=1.026	Vol =0.771 W³		

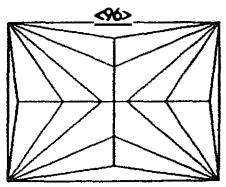
06.035C Rectangular Checkerboard 1.4

In the same reference, 06.035E is a similar design with a different L/W (1.600 instead of 1.380).









SPOT+Ambient for RI=1.54
Design: 06.035C
Table Brt=64 Avg Brt=62

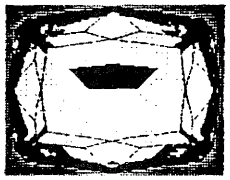
Reference: Word, Sid; *FACETS*, Jun 93, p6

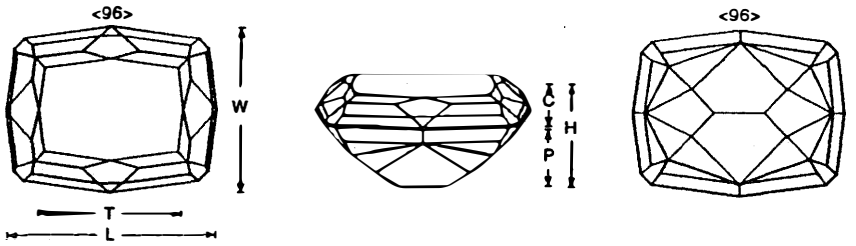
96 Index	L/W=1.380	P/W=0.572	C/W=0.257	T/W=0
56+4 facets	H/W=0.949	Vol =0.611 W³		

What's New

41.056 Ben's Cushion

Generic design that cannot be matched exactly.



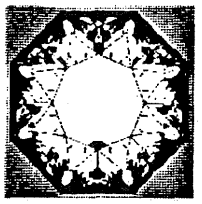


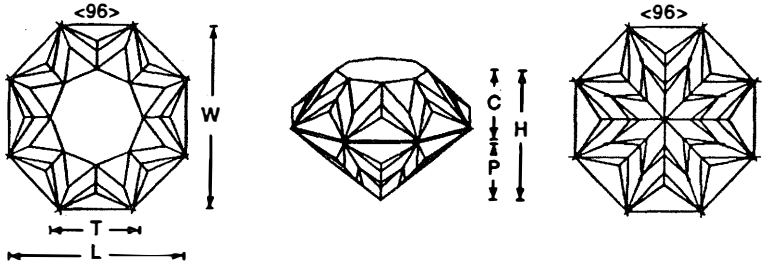
SPOT+Ambient for RI=1.54
Design: 41.056
Table Brt=93 Avg Brt=77

Reference: Dawson, Ben; *FACETS*, Jun 93,. p3

96 Index	L/W=1.312	P/W=0.489	C/W=0.136	T/W=0.903
69+12 facets	H/W=0.645	Vol = 0.373 W³		

21.181 Fandango Gem



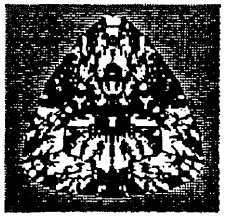


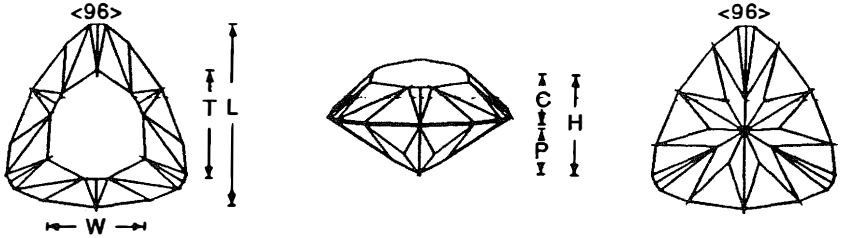
SPOT+Ambient for RI=1.54
Design: 21.181
Table Brt=99 Avg Brt=69

Reference: Hendrickson, Carl; *Midwest Faceter*, Jun 93, p7

96 Index	L/W=1.000	P/W=0.455	C/W=0.263	T/W=0.524
113+8 facets	H/W=0.738	Vol =0.280 W³		

13.080 Tribble's Cousin





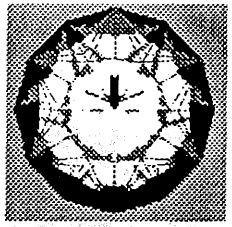
SPOT+Ambient for RI=1.76
Design: 13.080
Table Brt =55 Avg Brt=54

Reference: Hawes, Ernie; *New Mexico Facetor*, May 93
Hawes, Ernie; *Angles*, May 93, p7

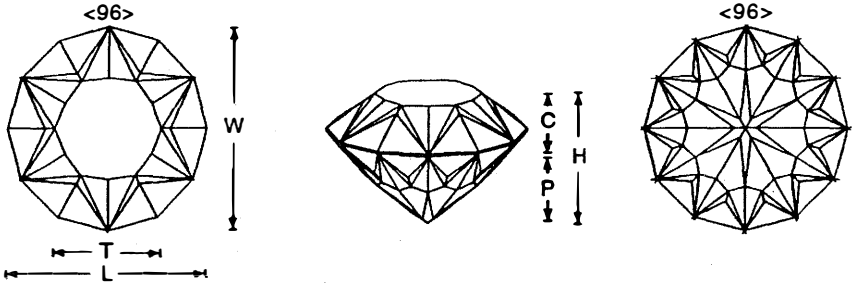
96 Index	L/W=1.026	P/W=0.382	C/W=0.165	T/W=0.596
61+18 facets	H/W=0.566	Vol =0.180 W³		

What's New

45.060 Doily #1



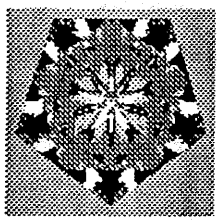
SPOT+Ambient for RI=1.54
Design 45.060
Table Brt=86 Avg Brt=59



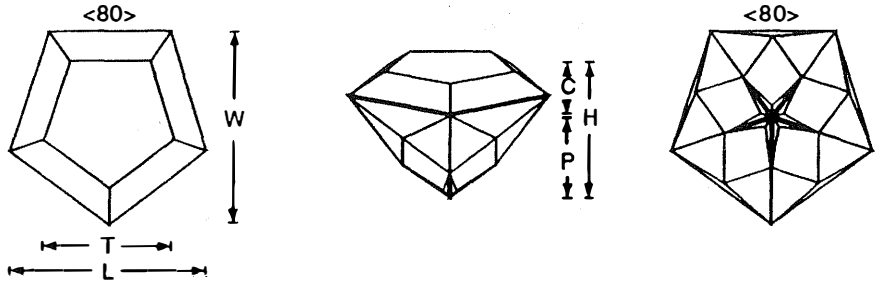
Reference: Covill, Charles W; Angles, Jul 93, p3
96 Index L/W=1.000 P/W=0.468 C/W=0.178 T/W=0.536
115+12 facets H/W=0.666 Vol =0.225 W³

30.070 Five Sided Star #5

Brightness pattern is not spectacular. We have found this is typical of designs with five symmetry. It may be impossible to achieve good brightness with five symmetry, but we do not have a theoretical reason why this should be so.



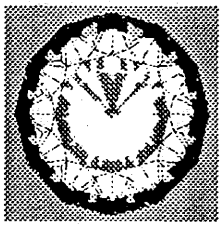
SPOT+Ambient for RI=1.61
Design: 30.070
Table Brt=46 Avg Brt=43



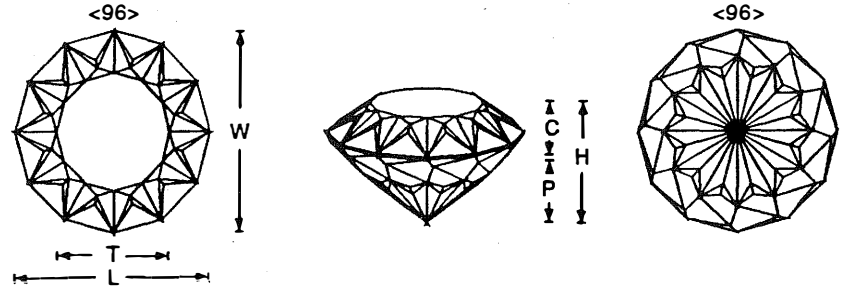
Reference: Covill, Charles W; Angles, Jul 93, p5
80 Index L/W=1.051 P/W=0.584 C/W=0.107 T/W=0.691
46+5 facets H/W=0.711 Vol =W³

45.069 CROCHET

Inspiration for the pattern came from looking in old crocheting books.



SPOT+Ambient for RI=1.61
Design: 45.069
Table Brt=81 Avg Brt=68

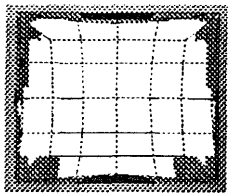


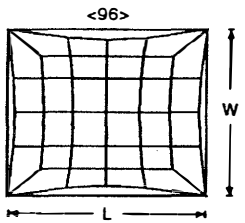
Reference: Covill, Charles W; FACETS, Aug 93, p3
96 Index L/W=1.000 P/W=0.451 C/W=0.145 T/W=0.583
157+12 facets H/W=0.616 Vol =0.212 W³

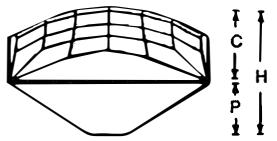
What's New

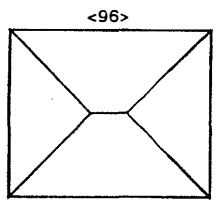
06.036 Rectangular Checkerboard #3

Simplified pavilion for 06.035C. Part of an article on "Mono Pavilions" by Sid Word.









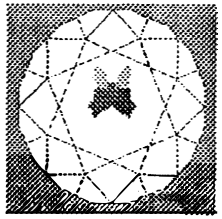
SPOT+Ambient for RI=1.54
Design: 06.036
Table Brt=100 Avg Brt=87

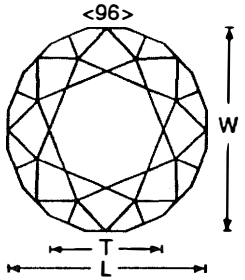
Reference: Hranka, Bill; *FACETS*, Aug 93, p6

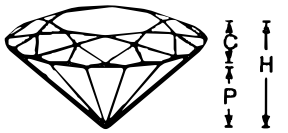
96 Index	**L/W=1.220**	**P/W=0.458**	**C/W=0.299**	**T/W=0**
40+4 facets	**H/W=0.777**	**Vol =0.434W³**		

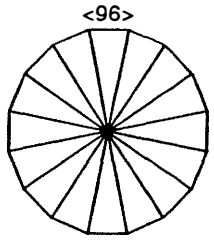
01.502 Brilliant

The are 14 other designs in the database using the identical pavilion, however no one else seems to have published the particular combination of a standard round brilliant crown with the simple sixteen facet pavilion. This is part of an article on "Mono Pavilions" by Sid Word in which he advocates simple pavilions to give increased brilliance. This design has one of the highest average brightness we have ever seen for quartz.









SPOT+Ambient for RI=1.54
Design 01.052
Table Brt=94 Avg Brt=97

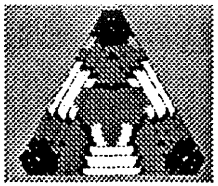
Reference: Word, Sid; FACETS, Aug 93, p7

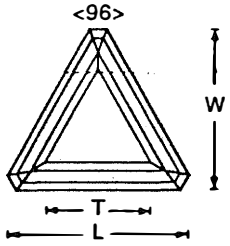
96 Index	**L/W=1.000**	**P/W=0.435**	**C/W=0.096**	**T/W=0.576**
49+16 facets	**H/W=0.550**	**Vol =0.172W³**		

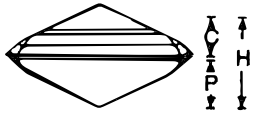
14.077 Cut Corner Triangle

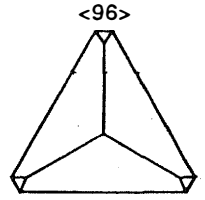
Simplified pavilion for a step cut crown on a triangle. Part of an article on "Mono Pavilions" by Sid Word.

Loss of "Table" brightness is due to main angles on the pavilion which are steep but not as steep as a "retro reflector" would need (54.5 degrees).









SPOT+Ambient for RI=1.54
Design: 14.077
Table Brt=45 Avg Brt=49

Reference: Word, Sid; FACETS, Aug 93, p7

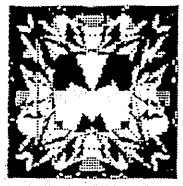
96 Index	**L/W=1.155**	**P/W=0.405**	**C/W=0.124**	**T/W=0.675**
22+6 facets	**H/W=0.546**	**Vol =0.168W³**		

What's New

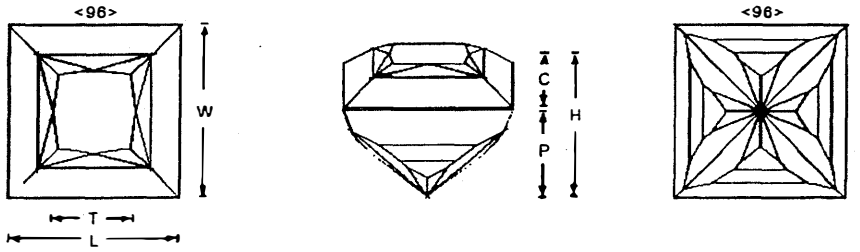
11.077 Picktur Phrame

Presence of step facets and non meetpoints at the corners makes this design "generic". Easy to cut if you are not concerned with reproducing a design exactly.

Odd spelling of the name, but that is the way it is in the reference.



SPOT+Ambient for RI=1.61
Design 11.077
Table Brt=76 Avg Brt=64



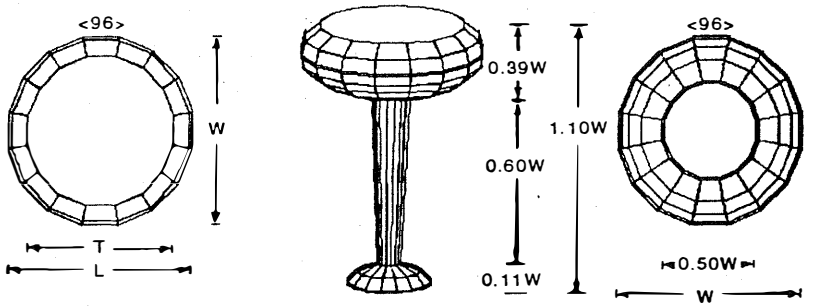
Reference: Covill, Charles W; Off-the-Dop, Aug 93, v4n3

96 Index	L/W=1.000	P/W=0.643	C/W=0.190	T/W=0.478
45+4 facets	H/W=0.853	Vol =0.425 W³		

01.503C Champagne Glass

This design is a three part "composite".
Part 1 is the bowl (01.503).
Part 2 is the stem (01.503A).
Part 3 is the base (01.503B).
The three parts are cut separately and then bonded together.

Brightness plot not applicable



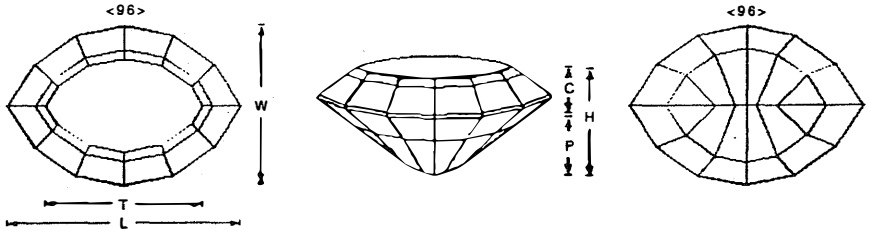
Reference: Hannam, Trevor; TFG Newsletter, Jul 93, v14n3p18

96 Index	L/W=1.000	H/W=1.10	T/W=0.793
164+16 facets			

03.084 Fat Marquise

Basically a simple generic step cut. Easy to cut "something" but not easy to reproduce the even straight tiers of facets.

SPOT+Ambient for RI=1.61
Design: 03.084
Table Brt=47 Avg Brt=41



Reference: Covill, Charles W; TFG Newsletter, Jul 93, v14n3p16

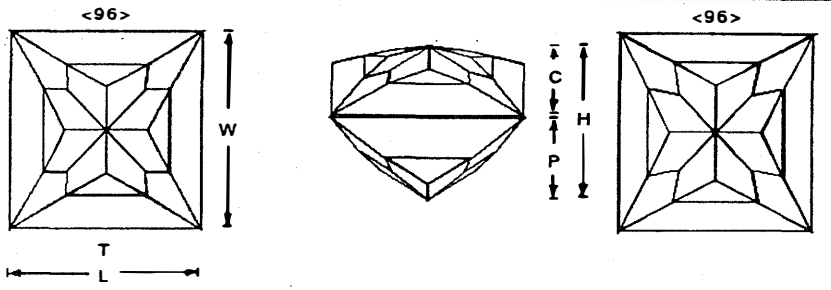
96 Index	L/W=1.497	P/W=0.719	C/W=0.174	T/W=1.011
49+12 facets	H/W=0.689	Vol =0.347 W³		

What's New

11.076 Easy Square Fun

Generic design. Placement of the central part of the design relative to the outline is indeterminate. Since there are no meetpoints that have to be pointed up, the design is very flexible. That is where the "easy" part comes in. The "hard" part is trying to get two stones to come out the same.

SPOT+Ambient for RI=1.61
Design 11.076
Table Brt=0 Avg Brt=58



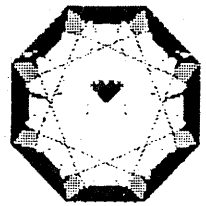
Reference: Covill, Charles W; TFG Newsletter, Jul 93, v14n3p15

96 Index L/W=1.000 P/W=0.566 C/W=0.228 T/W=0
40+4 facets H/W=0.815 Vol =0.350 W³

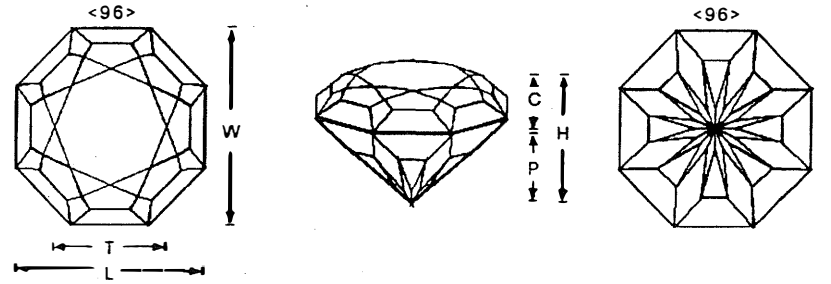
21.182 Suebelle #6

Text included with this published design noted it was an outgrowth of a design variation session using "Suzibelle" design (21.039) as a model. Crown is more complicated and there are more central facets, but the general facet arrangement has been retained.

Brightness is excellent for quartz.



SPOT+Ambient for RI=1.54
Design 21.182
Table Brt=97 Avg Brt=74



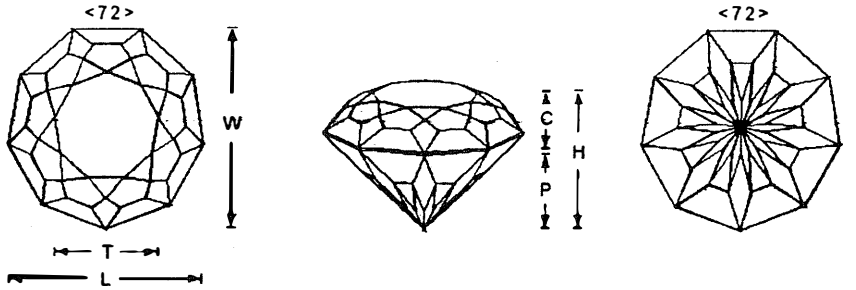
Reference: Pontius, Stephen & Johnson, Bob; Angles, Aug 93, v15n8

96 Index L/W=1.000 P/W=0.500 C/W=0.165 T/W=0.594
73+8 facets H/W=0.684 Vol =0.256 W³

38.022 Suebelle #8

Compare this design with 21.182. The basic modification is that an octagon (8 equal sided) design has been made into a nonagon (9 equal sided) variation. Compared to 21.182 this design has a slightly brighter center, but is darker around the edges giving it a lower average brightness.

SPOT+Ambient for RI=1.54
Design 38.022
Table Brt=100 Avg Brt=55



Reference: Pontius, Stephen & Johnson, Bob; Angles, Aug 93, v15n8

72 Index L/W=1.015 P/W=0.509 C/W=0.168 T/W=0.538
82+9 facets H/W=0.698 Vol =0.239 W³